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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/746,113	12/21/2000	Hui Wang	3375	2203

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AFFYMETRIX, INC
ATTN: CHIEF IP COUNSEL, LEGAL DEPT.
3380 CENTRAL EXPRESSWAY
SANTA CLARA, CA 95051

EXAMINER

CALAMITA, HEATHER

ART UNIT PAPER NUMBER

1637

DATE MAILED: 03/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	09/746,113		WANG ET AL.	
	Examiner		Art Unit	
	Heather G. Calamita, Ph.D.		1637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 and 24-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 and 24-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 December 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 23, 2004, has been entered.

Status of Application, Amendments, and/or Claims

2. Claims 1-20 and 24-31 are currently pending. The amendment to claim 1 has been entered.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-5, 11-14, 18-20 and 24-28 are rejected under 35 U.S.C. 102(e) as being anticipated by Caskey et al. (USPN 6,153,379, 11/28/2000).

Caskey et al. teach (claim 1) a method for detecting different mRNAs in a sample

Comprising (see col. 2 line27):

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hybridizing the sample with a microarray substrate, wherein the substrate has a plurality of different immobilized probes and wherein the probes are suitable for multiple bases primer extension reactions (see col. 2 lines 16-20);

synthesizing primer extension products with a nucleic acid polymerase, appropriate reagents and conditions, from the primers and using the mRNAs as templates wherein the primer extension products comprise 5' regions of the mRNAs (see col. 2 lines 30-35); and

detecting the primer extension products to determine the level of said different mRNAs wherein target regions of the probes are distributed along the mRNAs (see col. 2 lines 42-50).

With regard to claims 2 and 3 Caskey et al. teach the nucleic acid polymerase is a thermostable reverse transcriptase (see col. 6 line 43). With regard to claim 4, Caskey et al. teach

oligonucleotide probes (see col. 2 line 18). With regard to claim 5, Caskey et al. teach

oligonucleotide probes immobilized on the substrate in a 5'-3' direction (see col. 12 lines 6-9).

With regard to claims 11-14, Caskey et al. teach 900 probes (see col. 5 line 13). With regard to

claims 18-20, Caskey et al. teach the extension products are detected with a label incorporated during synthesizing (see col. 7 lines 19-23, col. 8 lines 20-30). With regard to claims 24 and 25,

Caskey et al. teach labeled dNTPs (see col. 8 lines 20-30). With regard to claims 26 and 27,

Caskey et al. teach tiling probes for regions of RNA and determining sequence variations by

detecting the extension products of the tiling probes, and the sequence variations are SNPs (see

col. 5 lines 5-22). With regard to claim 28, Caskey et al. teach the probes border regions of exons

and the arrangement in the RNAs is determined by detecting the extension products of the tiling probes (see col. 5 lines 5-22).

Claim Rejections - 35 USC § 103

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4. Claims 6-10 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caskey et al. (USPN 6,153,379, 11/28/2000) in view of Heller et al. (USPN 5,605,662, 02/25/1992).

The teachings of Caskey et al. are described previously.

Caskey et al. do not teach (claims 6) synthesis of probes on the substrate. With regard to claims 7-10, Caskey et al. do not teach detection of multiple RNAs. With regard to claims 15-17, Caskey et al. do not teach 10,000 probes per cm².

With regard to claim 6, Heller et al. teach probe (via combinatorial synthesis) synthesis (see col. 21 lines 1-43). With regard to claims 7-10 Heller et al. teach detection of multiple RNAs, DNA is exemplified, however RNA is disclosed in col. 17 line 15 (see col. 18 lines 39-40). With regard to claims 15-17, Heller et al teach 10,000 probes per cm² (see col. 18 lines 39-40).

It would have been prima facie obvious to utilize the method of sequencing as taught by Heller et al. (USPN 5,605,662, 02/25/1992) with the array and method of detecting RNA as taught by Caskey et al. (USPN 6,153,379, 11/28/2000) since Heller et al. (USPN 5,605,662, 02/25/1992) note "that combinatorial synthesis allows very large numbers of sequences to be synthesized on device (see col. 20 line 60-62)." An ordinary practitioner would have been motivated to use the method of sequencing as taught by Heller et al. (USPN 5,605,662, 02/25/1992) with the array and method of detecting RNA as taught by Caskey et al. (USPN 6,153,379, 11/28/2000) in order to produce a large number of probes within the microlocations of the microarray. Moreover, it would have been prima facie to increase the number of probes within the microlocation to detect a greater number of different RNA targets.

5. Claims 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caskey et al. (USPN 6,153,379, 11/28/2000) in view of Combimatrix.

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The teachings of Caskey et al. are described previously.

Caskey et al. do not teach (claims 30-31) fragmenting RNA

Combimatrix teach fragmenting RNA (see p. 4).

It would have been prima facie obvious to utilize the array and method of detecting RNA as taught by Caskey et al. (USPN 6,153,379, 11/28/2000) with fragmented RNA as taught by Combimatrix (2001) since Combimatrix (2001) state, "RNA targets should be fragmented to maximize binding specificity and detection sensitivity (see p. 4)." An ordinary practitioner would have been motivated to use the array and method of detecting RNA as taught by Caskey et al. (USPN 6,153,379, 11/28/2000) with fragmented RNA as taught by Combimatrix (2001) in order to maximize the binding specificity of the RNA to the array while also increasing detection sensitivity.

Allowable Subject Matter

6. Claim 29 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

7. Applicant's arguments with respect to rejections under 102 and 103 have been considered but are moot in view of the new ground(s) of rejection.

Summary

8. No claims are allowed.

Correspondence

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9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Heather G. Calamita whose telephone number is 571.272.2876 and whose e-mail address is heather.calamita@uspto.gov. However, the office cannot guarantee security through the e-mail system nor should official papers be transmitted through this route. The examiner can normally be reached on Monday through Thursday, 7:00 AM to 5:30 PM.

If attempts to reach the examiner are unsuccessful, the examiner's supervisor, Gary Benzion can be reached at 571.272.0782.

Papers related to this application may be faxed to Group 1637 via the PTO Fax Center using the fax number 571.273.8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to 571.272.0547.

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hgc


JEFFREY FREDMAN
PRIMARY EXAMINER
2/24/15